

State of Hawaii  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
Engineering Division  
Honolulu, Hawaii 96813

October 9, 2009

Board of Land and Natural Resources  
State of Hawaii  
Honolulu, Hawaii

**APPLICATION FOR A DLNR DAM SAFETY  
CONSTRUCTION/ALTERATION PERMIT  
PERMIT NO. 21 – PUU KA ELE RESERVOIR (HI00028)  
KILAUEA, KAUAI**

The Engineering Division hereby submits an application for your authorization and approval for issuance of a Dam Safety Construction/Alteration Permit for the removal of the Puu Ka Ele Reservoir to Jurassic Kahili Ranch, pursuant to Chapter 179D Hawaii Revised Statutes and Chapter 190 Hawaii Administrative Rules.

APPLICANT:

Mr. Walter Kortschak  
Jurassic Kahili Ranch  
450 Hamilton Avenue  
Palo Alto, CA 94301

LANDOWNER:

Same as applicant

SUMMARY OF REQUEST:

Application for a Dam Safety Construction/Alteration Permit for the removal of the Puu Ka Ele Reservoir (HI00028) in Kilauea, Kauai, Hawaii, See Exhibit 1.

LOCATION: Kilauea, Kauai, Hawaii, TMK: (4) 5-2-02; (4) 5-2-03. See Exhibit 2.

BACKGROUND:

A preliminary application for the removal of the Puu Ka Ele Reservoir was filed on May 21, 2009 by the dam owner Mr. Walter Kortschak of Jurassic Kahili Ranch. During an inspection conducted on March 20, 2009 by the Army Corps of Engineers, the dam was found to be in fair to poor condition and deficiencies were listed for the owner to carry out corrective actions. The owner has thus decided to remove the reservoir from service.

The Puu Ka Ele Reservoir dam is an earthen embankment that was reportedly constructed around 1890 to 1905. The reservoir was used as a source of water supply for the Kilauea Sugar Plantation until 1971. After 1971, the reservoir was abandoned until about 1984 when the reservoir was used to provide irrigation water for the Kilauea Agronomics guava plantation. Walter Kortschak acquired the Puu Ka Ele Reservoir in 2003 and has been using the reservoir to store water for livestock until 2008.

#### DESCRIPTION:

The Puu Ka Ele Reservoir dam is approximately 25-ft high, 1190-ft long, and 10–14 ft wide. The reservoir covers an area of 30.6 acres. The maximum reservoir impoundment volume is estimated at 490 ac-ft (159.7 MG). The existing outlet is an 18-inch cast iron pipe through the northwestern portion of the embankment. The spillway is an earth-lined channel approximately 38-ft wide at the control section.

The Puu Ka Ele Reservoir watershed is approximately 0.83 sq. miles in area. The watershed has three types of runoff associated with it; sheet flow in the upper watershed, shallow concentrated flow in the middle watershed, and channel flow in the lower portion of the watershed where water drains into an intermittent and three ephemeral streams, which flow into the reservoir.

Based on the March 20, 2009 Army Corps of Engineers inspection it was noted that the upstream, crest and downstream faces contained many large and small trees and overgrown brush hindering the ability to conduct an adequate inspection. Some of the tree stumps and roots were so large that they crossed the width of the crest and slopes. Removal of this excessive vegetation would probably require rebuilding of the dam embankment.

As the reservoir storage is not needed for use the dam will be removed by installing a breach channel through the embankment so that it no longer impounds water under normal weather conditions. The breach channel will be located at an elevation of 396 MSL, approximately 80-ft southwest of the existing outlet pipe. The base of the reservoir is at 393-ft MSL and the flow from the streams will continue to follow its existing course (through the reservoir and outlet works to the downstream channel). The breach channel will be 135-ft wide at the base and 544-ft wide at the top with side slopes of 3H:1V with a benched section in between, and will be removing approximately 24,700 cubic yards of material. The removed material will be placed in fills areas around the reservoir. See Exhibit 3.

#### REMARKS:

Jurassic Kahili Ranch and its consultant, LFR, Inc., have completed a basis of design, plans and specification and requests for the approval of a dam safety construction/alteration permit.

The Department along with their consultant, Kleinfelder West, Inc., has reviewed the documents and concluded that it is sufficient for its intended purposes. Staff recommends approval of this permit application. See Exhibit 4.

RECOMMENDATION:

That the Board:

1. Authorize the approval and issuance of the Dam Safety Construction/Alteration Permit for this project; and
2. Direct the Chairperson to issue a dam safety permit for the removal of the Puu Ka Ele Reservoir (DLNR Dam Safety Construction/Alteration Permit No. 21) subject to such other terms and conditions as may be prescribed by the Chairperson to best serve the interests of the State.

Respectfully submitted,



ERIC T. HIRANO  
Chief Engineer

APPROVED FOR SUBMITTAL:



LAURA H. THIELEN, Chairperson

Exhibit(s):	1	Owner Permit Application
	2	Location Map and Picture of Proposed Breach
	3	Construction Drawing pages
	4	DLNR Consultant Review (to be provided at Board meeting)

State of Hawaii  
 BOARD OF LAND AND NATURAL RESOURCES  
 Department of Land and Natural Resources  
 Engineering Division

APPLICATION FOR APPROVAL OF PLANS AND SPECIFICATIONS FOR CONSTRUCTION,  
 ENLARGEMENT, REPAIR, ALTERATION, OR REMOVAL OF A DAM

Date of Application: May 1, 2009

Applicant:

Contact Name: Mr. Walter Kortschak Firm / Company: Jurassic Kahili Ranch

Mailing Address 499 Hamilton Ave., Palo Alto, CA 94301

Telephone: 650 614 6600 Fax: 650 614 6700 Email: wkortschak@summitpartners.com

The Applicant hereby applies to the Board of Land and Natural Resources for the approval of the attached plans and specification for the Decomissioning of Puu Ka Ele Reservoir (construction, etc.) in accordance with Chapter 179D HRS (as amended by Act 262, SLH 2006), and subject to the provisions, conditions, and limitations of the current Hawaii Administrative Rules and various DLNR dam safety guidelines.

Accompanying this application are:

(please check)

1. Filing fee (\$25.00) (Waived for government agencies)
2. Three (3) copies of the Detailed Cost Estimate
3. Three (3) copies of the Final Design Report
4. Three (3) copies of the Plans
5. Three (3) copies of the Specifications
6. Proposed Construction Schedule
7. Supporting documents:

✓  
✓  
✓  
✓  
✓  
✓  
✓  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

N/A  
 \_\_\_\_\_  
 \_\_\_\_\_

NAME OF STRUCTURE: Puu Ka Ele Reservoir (HI-00028/KA-0028)

DAM OR RESERVOIR LOCATION: Kilauea, Kauai County

Island: Kauai

Tax Map Key: (4) 5-2-02; (4) 5-2-03

Attach USGS topographic map (scale 1" = 2000') and property tax map (showing location access to site, proposed work) See Figures 1 and 2 in Design Report

State Land Use District: X Agriculture     Urban     Rural     Conservation

**BRIEF DESCRIPTION OF WORK TO BE PERFORMED**

Install a trapezoidal-shaped breach channel, 135 ft wide at the base and 285 ft wide at the top, through the embankment of the Puu Ka Ele Dam.  
 \_\_\_\_\_  
 \_\_\_\_\_

**Exhibit 1**

**TECHNICAL INFORMATION:**

DLNR-Dam Safety-Sheet 2

1. Drainage Area 0.83 sq. miles or 531 acres
2. Classification of Dam High-Hazard, Small-Sized Dam
3. Type of Structure Earthen Embankment
4. Elevation-Area-Capacity Data:

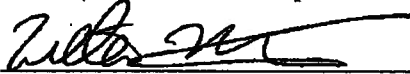
	Elevation	Surface Area (acres)	Total Storage Volume (acre-feet)
Natural Streambed	393 ft msl	N/A	0
Primary Spillway	411.5 ft msl	30.6	173
Secondary Spillway	N/A	N/A	N/A
Top of Dam	420 ft msl	35.4	490
Design Water Level	411.5 ft msl	30.6	173
Invert of Drain	394 ft msl inside reservoir; 390 ft msl on downstream toe		
5. Spillway Details (Type, Dimensions, Material)  
Primary: Open channel, 38-ft-wide at control point, earthen base, concrete sill  
Secondary: None
6. Purpose of Structure Formerly: Agricultural water supply; Currently - None  
(water supply, irrigation, recreation, real estate development, etc.)
7. Attach rainfall and stream flow records, and flood-flow records and estimates (as accurately as may be readily obtained) See Table 1 and Appendices A and B in Design Report.

**ADDITIONAL INFORMATION**

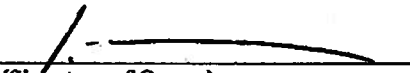
1. Primary Owner Contact (if different from applicant) Same as Applicant  
Owner Company or Entity: \_\_\_\_\_  
Mailing Address \_\_\_\_\_  
Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_
2. Registered Hawaii Professional Engineer who prepared the plan Mr. Jeffrey C. Morrell  
Mailing Address 220 S. King St., Suite 1290, Honolulu, HI 96813  
Registration No. 8426-C  
Telephone: 808 522 0321 Fax: 808 522 0366 Email: jeff.morrell@lfr.com
3. Registered Professional Engineer to be responsible for inspection during construction \_\_\_\_\_  
Mr. Jeffrey C. Morrell
4. Contractor (If known) Unknown at this time  
Mailing Address \_\_\_\_\_  
Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_
5. List all other permits applications submitted to other governmental agencies:  
Kauai County Grubbing & Grading Permit; NPDES General Permit; State Historic Preservation Notification  
(Waived Permits: Department of Army Section 404 Permit; State Water Commission, Water Use Permit)
6. Anticipated effect of proposed structure on natural environment: Minor sediment transport and erosion may occur during construction.

DLNR-Dam Safety-Sheet 3

7. List all other parties that have ownership or other interest on the parcels where the dam and reservoir are located and identify their interest in the property. The Owners herein listed below concur with the work proposed within this application by the applicant and by his/her signing hereto, the owner of the land extends to the Board of Land and Natural Resources, and its designated representatives, a right-of-entry onto the project site to conduct any investigations or inspections required in compliance with the provisions of Chapter 13-190, Hawaii Administrative Rules. (Submit additional copies of this sheet should there be more owners)

  
(Signature of Owner)

JURASSIC KAHU RANCH LLC.  
499 HAMILTON AVE., PALO ALTO, CA 94301  
(Address / Interest in Dam or Reservoir)

  
(Signature of Owner)

Halaloni Ranch  
350 S. Hudson Ave LA, Ca 90020  
(Address / Interest in Dam or Reservoir)

\_\_\_\_\_  
(Signature of Owner)

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(Address / Interest in Dam or Reservoir)

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(Signature of Owner)

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(Address / Interest in Dam or Reservoir)

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(Signature of Owner)

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(Address / Interest in Dam or Reservoir)

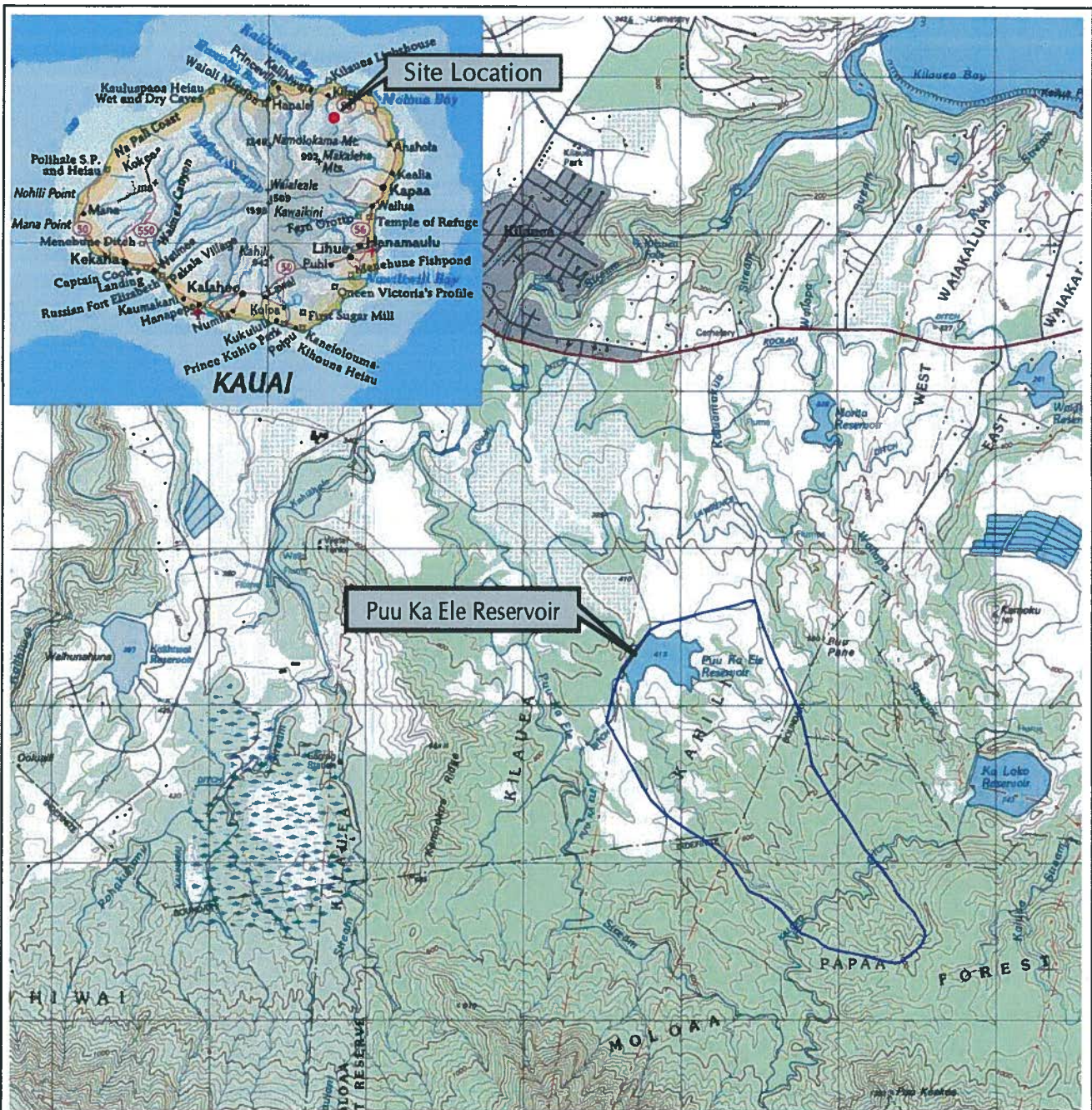
\_\_\_\_\_  
(Signature of Owner)

\_\_\_\_\_  
(Address / Interest in Dam or Reservoir)

I, WALTER G. KORTSCHAK, the applicant, hereby certify that the information herein is true and factual to the best of my knowledge. Signing below indicates that the applicant understands that, if the permit requested is granted by the Board of Land and Natural Resources, the proposed work is to be initiated and completed within two (2) years of the approval date, unless specifically permitted in the approved permit terms and conditions.

, MANAGING MEMBER  
(Signature of Applicant & Title)

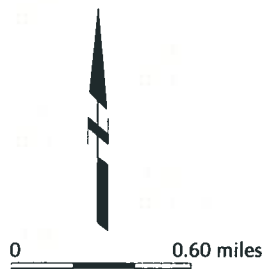
Date: 5/21/09



KEY



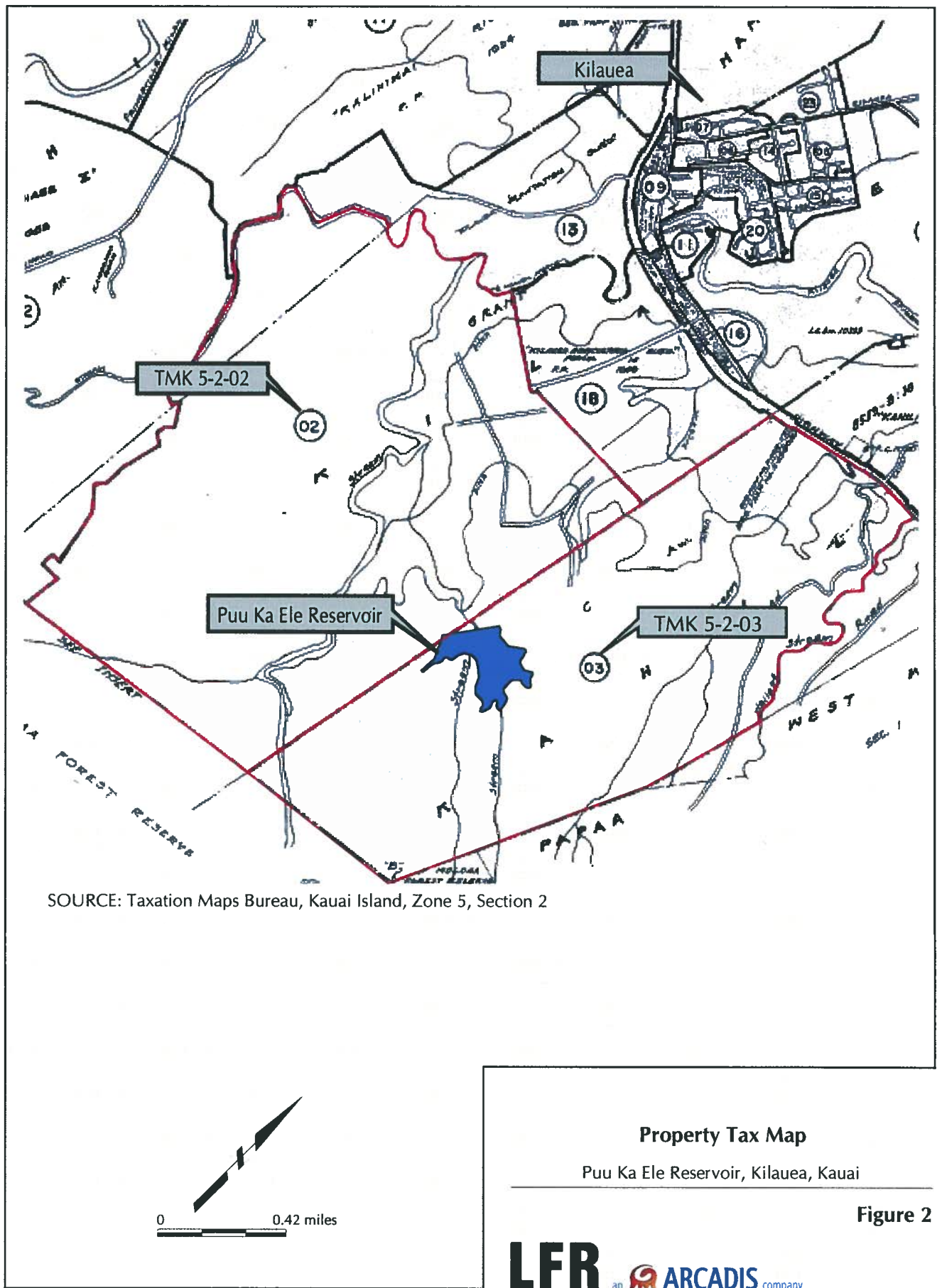
Drainage Area



### Site Vicinity Map

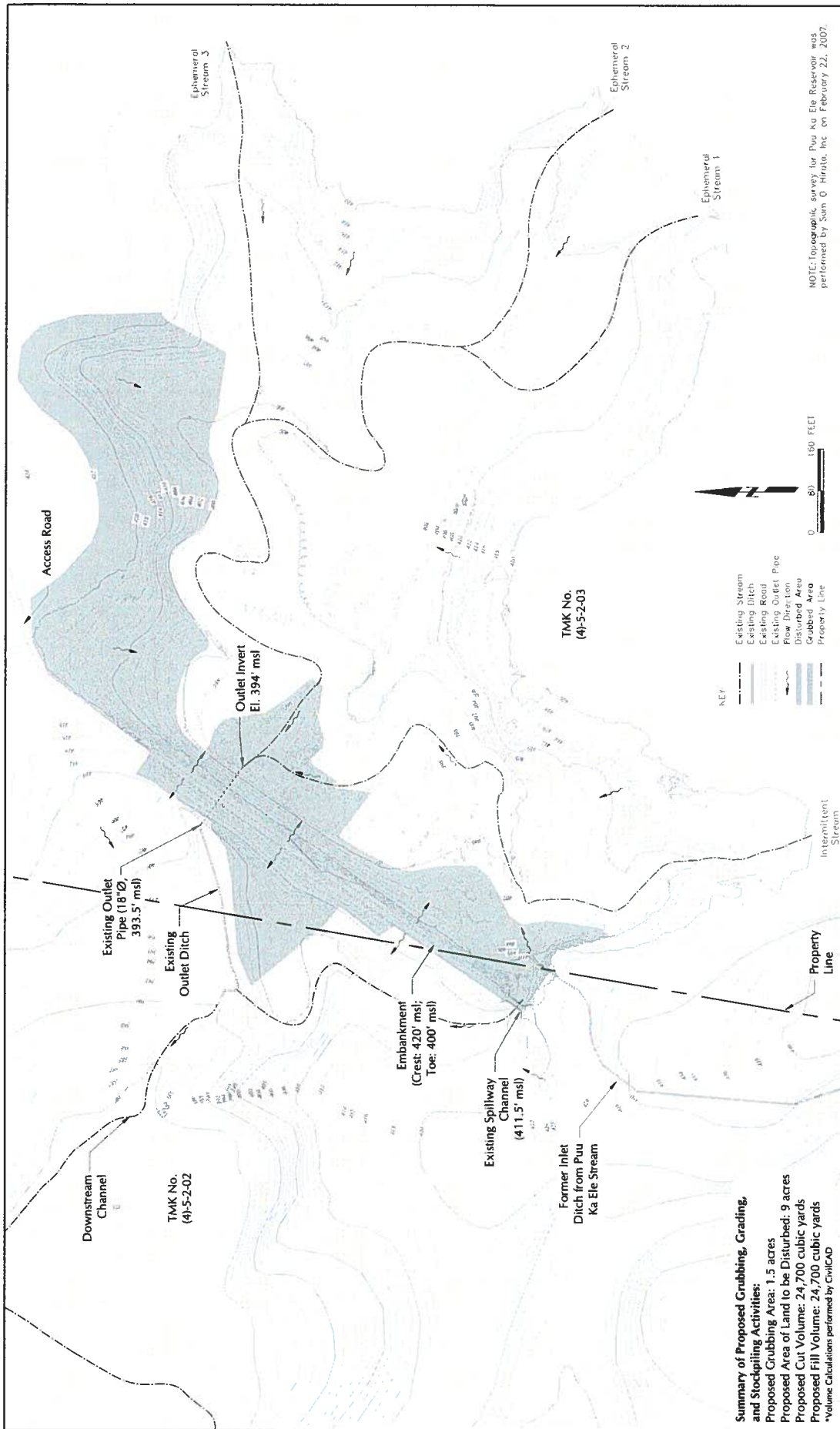
Puu Ka Ele Reservoir, Kilauea, Kauai

Figure 1





### Exhibit 3

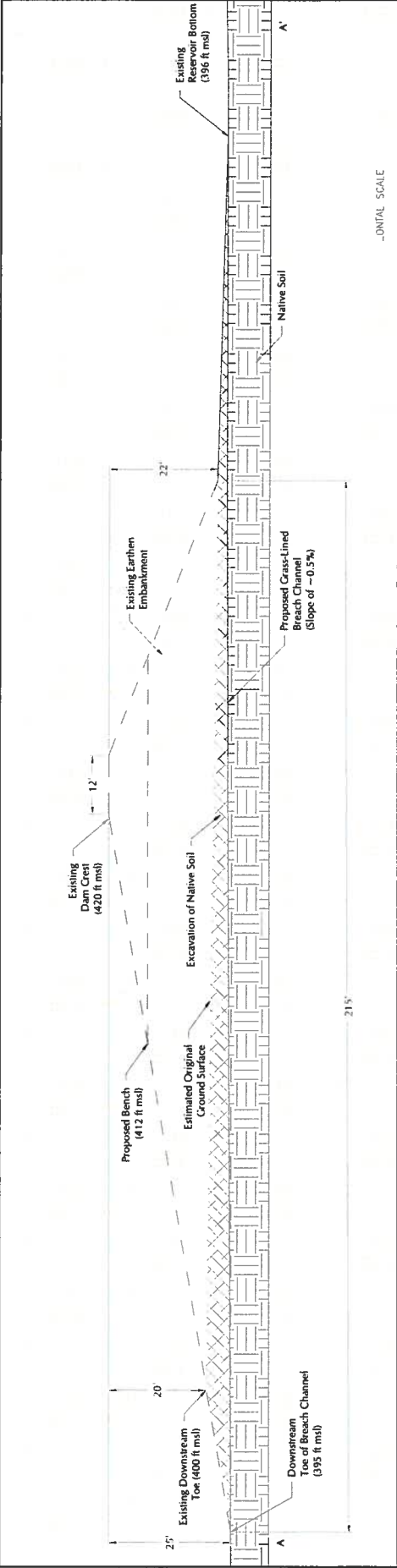


**Summary of Proposed Grubbing, Grading, and Stocking Activities:**  
 Proposed Grubbing Area: 1.5 acres  
 Proposed Area of Land to be Disturbed: 9 acres  
 Proposed Cut Volume: 24,700 cubic yards  
 Proposed Fill Volume: 24,700 cubic yards  
 \*Volume Calculations performed by CIVICAD

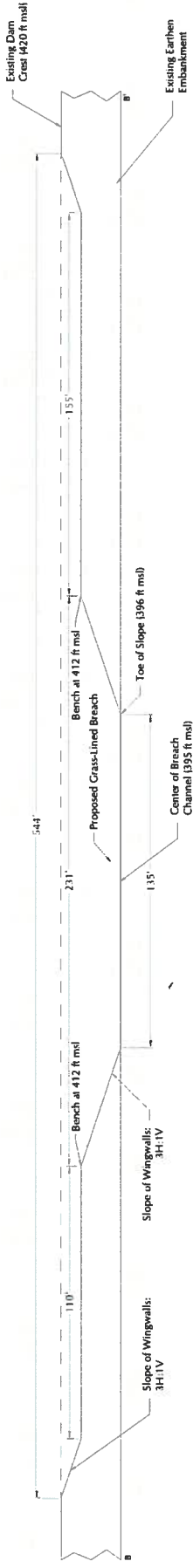
NOTE: Topographic survey for Puu Ka Ele Reservoir was performed by Sun O. Hirota, Inc. on February 22, 2007.

THIS WORK WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. DATE: 9/18/2007 [Signature]		PROJECT NO.: 1005-1120-XX SHEET NO.: C-1													
REVISION HISTORY <table border="1"> <thead> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>DATE</th> <th>APPROVED</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Added all volume, added cut and fill volume, added water for</td> <td>8/7/2009</td> <td>SEA</td> </tr> <tr> <td>2</td> <td>Added property line and TMK numbers, added volume, added disturbed area.</td> <td>9/18/2009</td> <td>SEA</td> </tr> </tbody> </table>		NO.	DESCRIPTION	DATE	APPROVED	1	Added all volume, added cut and fill volume, added water for	8/7/2009	SEA	2	Added property line and TMK numbers, added volume, added disturbed area.	9/18/2009	SEA	SITE PLAN EXISTING CONDITIONS PUU KA ELE DAM AND RESERVOIR MAUNALEA, KAUAI	
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DRAWN BY: [Signature] CHECKED BY: [Signature] REVISION NO.: 1 DATE: 09/18/2009 PROJECT NO.: 1005-1120-XX SHEET NO.: C-1		LFR 230 South King Street, Suite 1200 Honolulu, Hawaii 96811 Tel: 808-531-2504 Fax: 808-531-2504													

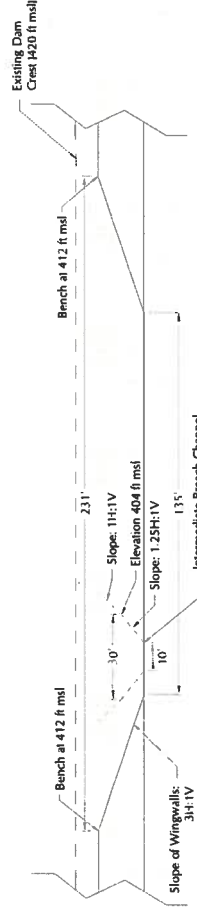




VERTICAL SCALE



DETAIL 5B: INTERMEDIATE CONSTRUCTION DETAIL  
SIDE VIEW OF BREACH AT BREACH CENTERLINE



During Construction Refer to Sheet G-2, Breach Excavation Notes

THIS WORK WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND I AM A LICENSED PROFESSIONAL ENGINEER. I CERTIFY THAT THE PROJECT WILL BE UNDER MY OBSERVATION.

DATE: 9/18/2009

**REVISION HISTORY**

NO.	DESCRIPTION	DATE	APPROVED
1	Added Detail 5B Intermediate Construction Detail	9/18/2009	REA

**PROJECT CROSS-SECTIONS**

PLU VALLE DAM AND RESERVOIR  
JURASSIC PARK BRANCH  
REARVIEW, CALIF.

**DLFR**

232 South New Street, Suite 1270  
Hawthorne, Illinois 60431  
Phone: (808) 332-0371  
Fax: (808) 332-0388

DATE: 9/18/2009  
PROJECT NO: 08-11-0008  
SHEET NO: C-5